



## **SCP-ASXHA Switch Control Processor Release Notes**

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## 1.0 Purpose of Release Notes

These release notes highlight the features and operational concerns of the SCP-ASXHA switch control processor (SCP).

## 2.0 Supported Operating Systems, Architectures, Hardware

- The SCP-ASXHA is not supported in the ASX-200, 200WG, or *ForeRunnerLE* 155 ATM switches.
- The SCP-ASXHA requires the use of *ForeThought* 4.0.1 or greater. Any attempt to operate the SCP-ASXHA with an earlier version of software will result in a switch panic or other form of non-recoverable error.

## 3.0 List of New Features in the Product

- i960 HA 40MHz processor
- 40MHz local bus
- Supports 16MB and 32MB DRAM configurations
- 4MB of FLASH
- Extended SCP diagnostics

### 3.1 Extended SCP Diagnostics

The diagnostics on the SCP-ASXHA SCP provide more test options than the current SCP. The new diagnostic commands are listed below:

bd [addr][mode]	- set data breakpoint. If no address is given, all current breakpoints are displayed default mode is set to ANY access
test-dl	- test DRAM in a longer, more robust test
test-sim <sim>	- test DRAM SIMM # <sim>
march-data <addr>	- test the integrity of the data bus
march-address <addr>	- test the integrity of the address bus
test-sdb	- test SDB
boot-flash	- attempt to boot from the Flash
boot-ethernet	- attempt to boot from the Ethernet
bcopy <src> <dest> <len-in-bytes>	
wbyte <addr> <data>	- write lowest byte of data to addr
wshort <addr> <data>	- write lowest short of data to addr
wint <addr> <data>	- write data to addr
sbyte <addr>	- show the value of the byte at addr
sshort <addr>	- show the value of the short at addr
sint <addr>	- show the value of the int at addr
erase-flash	- Erase entire FLASH memory
erase-fc <chip>	- Erase FLASH chip <chip>

## 4.0 Known Issues or Concerns

### 4.1 Installing a New SCP-ASXHA

You must back up your configuration database (CDB) before installing a new SCP-ASXHA in your switch. Once the SCP-ASXHA has been installed, you must retrieve the CDB and download it to the new SCP. Follow the procedure below:

#### CAUTION



Failure to backup and restore your CDB can result in lost configuration data.

#### 4.1.1 Backing Up the Database

These commands let the user make a backup of the CDB. The remote host to which the file will be backed up must be running the TFTP server code.

Since TFTP is used to perform the CDB backup, you must first create an empty file in the `/tftpboot` directory on the remote host to receive the CDB. Use the `touch` command to do this. Then, use the `chmod` command to change the permissions of that file so that it will let the switch write the backup CDB to that file.

Perform the following steps to back up your CDB:

1. Telnet to your remote host and log in.
2. Enter the following commands in sequence:

```
cd /tftpboot
touch <backup file name>
chmod 777 <backup file name>
```

3. Exit from the telnet session.
4. Telnet to the switch and log into the ATM Management Interface (AMI).
5. Enter the following command at the `localhost::>` prompt:

```
operation cdb backup <host>:<backup file name>
```

You should receive the following message:

```
CDB backup was successful
```

Your backup file now resides in the file and on the host you specified.

### 4.1.2 Removing an SCP

The SCP-ASXHA can be removed from a switch fabric without turning off the power. The following procedure explains how to remove an HA-based SCP from a switch fabric.

#### **WARNING!**



It is highly recommended that you use a grounding strap when handling this or any other component.

#### **CAUTION**



Do not attempt to remove or replace an SCP without first removing all connections to the SCP (i.e., serial or Ethernet connections).

1. Loosen the captive fasteners on either edge of the SCP using a straight screwdriver.
2. Pull firmly and carefully on the two captive fasteners, removing the SCP from the switch fabric.
3. Place the SCP in an electro-static bag.

### 4.1.3 Installing an SCP

The SCP-ASXHA can be inserted in a switch fabric without turning off the power. The following procedure explains how to install an HA-based SCP into a switch fabric.

#### **CAUTION**



Take care to properly align the SCP in the card guides in the first step.

1. Insert the new SCP into the switch fabric by sliding it into the card guides.
2. Push firmly to seat the SCP so its faceplate is flush with the front panel of the switch board.
3. Re-tighten the captive fasteners with a straight screwdriver to ensure the SCP is secure.

Once the SCP has been installed and the switch boots, you can move on to Section 4.1.4 and restore the configuration database (CDB).

#### 4.1.4 Restoring the Database

To restore the CDB, you must connect a terminal to the SCP-ASXHA's serial port and open a session in AMI. After logging in, you must configure the appropriate interface(s) that will allow you to connect to the remote host to which you backed up the CDB. For more information on configuring interfaces on the switch, see the AMI configuration chapter in the appropriate switch manual.

Once you have configured the proper interfaces to allow a connection to the remote host, enter the following parameters at the `localhost::>` prompt:

```
operation cdb restore <host>:<backup file name>
```

You will be prompted to verify this command, because the switch will be rebooted once the CDB has been restored. Type `y` and press `<ENTER>` at the prompt.

Once the switch reboots, the PVCs will be re-established provided that none of the network modules were replaced after the CDB was backed up and provided that all of these steps have been performed properly.



If you have any questions about the above procedures, contact FORE Systems' Technical Support (Section 5.0).

## 4.2 Ferrite Cable Installation

Each SCP-ASXHA is supplied with a ferrite cable, which must be attached to an Ethernet cable before inserting it into the Ethernet port on the SCP. The ferrite cable acts as an electromagnetic interference (EMI) shield. This protective shield is necessary to block radio frequency interference (RFI) signals emitted from the ATM switch.

This section provides the instructions necessary to install the ferrite cable.

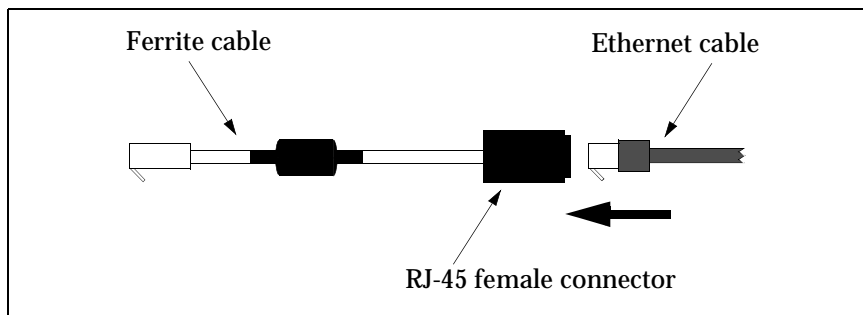
### 4.2.1 Required Hardware

Before you begin, make sure you have one ferrite cable (provided by FORE) for each SCP-ASXHA Switch Control Processor.

### 4.2.2 Installing the Ferrite Cable

Perform the following steps to ensure proper installation of the ferrite cable:

1. Ensure that the SCP has been inserted properly into your FORE Systems ATM switch.
2. Insert your Ethernet cable (RJ-45 male connector) into the box-shaped assembly (RJ-45 female connector) at the end of the ferrite cable as shown below.



3. Insert the connector end of the attached ferrite cable into the Ethernet port on the SCP just as you would a normal Ethernet cable.



## 4.3 Dual SCP Setup

This section explains SCP failover support, available when two SCPs are installed in a single switch fabric. For more information about configuring dual SCPs via AMI, see the documentation that came with your FORE Systems ATM switch.



Only SCP-ASXHAs, or later, support the dual SCP configuration. Using an earlier version SCP in a redundant configuration can cause irreparable damage to the SCP or switch fabric.

The following terms should be understood when discussing redundant SCPs:

**Primary SCP** - the SCP that is given control at power-up of the entire switch. For switches with multiple fabrics, each fabric has a primary SCP. By default, the SCP in slot X is designated the primary SCP. Once the switch is powered up, the term “primary” is no longer significant, and an SCP is either the Controlling SCP or the Standby SCP.

**Controlling SCP** - the SCP that is currently in control of the switch fabric.

**Standby SCP** - the SCP that is NOT in control of the fabric.

### 4.3.1 Overview

When two SCPs are installed in a switch fabric, the switch recognizes their presence and automatically runs in dual SCP mode. When the switch boots, the SCP which resides below network module slots A and C (slot X) is designated as the primary SCP by default. However, this designation can be altered via AMI. The SCP which resides in the slot below network module slots B and D (slot Y) is designated as the standby SCP by default.

While in dual SCP mode, the controlling SCP emits a “heartbeat” at regular intervals. This heartbeat is monitored by the standby SCP. In the event of a hardware failure on the controlling SCP, the heartbeat disappears and the standby SCP takes over. Switch configuration information (i.e., CDB configuration, FLASH configuration, etc.) can be synchronized between the controlling and standby SCP so that this information is maintained if SCP failover occurs.

If a failure is detected on the controlling SCP, the standby SCP takes control of the fabric. At this point, PVC connections are dropped, and any SVCs that had been established are torn down at the switch. Once the standby SCP takes control of the switch fabric, PVCs will be re-established (according to the “last-synchronized” CDB), and end-stations will signal the switch to create new SVCs. The larger the CDB (e.g., number of PVCs), the longer the standby SCP will take to fully restore the switch.

The failed SCP can then be removed and replaced with another HA-based SCP.



A standby SCP (SCP-ASXHA or later) can be hot-inserted into the slot from which a failed SCP has been removed.

Repeated and successive hot-insertion or removal of a standby SCP can potentially cause a reset on the primary SCP. This occurrence is intermittent, but can result in cell loss if it does occur.

### EXAMPLE:

An ASX-200BX, with two SCPs installed, is powered on. No changes to the dual SCP configuration have been made, so the SCP in slot X is designated the primary SCP and therefore controls the switch. The primary SCP has asserted itself as the controlling SCP. The SCP in slot Y is now the standby SCP. From this point on, the designation of “primary SCP” is insignificant.

The SCP in slot X (the controlling SCP) fails. The standby SCP (slot Y) assumes control of the switch and becomes the controlling SCP. The SCP in slot X is replaced with a new SCP. The new SCP in slot X boots and is now the standby SCP. If the controlling SCP (currently in slot Y) fails, then the SCP in slot X will become the controlling SCP.

Throughout this example, the SCP in slot X is always the primary SCP (unless this designation is changed to slot Y via AMI), but it does not always control the switch. The designation of primary is only meaningful when both SCPs restart at the same time (i.e., at power up).

### CAUTION



For proper synchronization of information between SCPs, ensure that the amount of free space on the FLASH of both SCPs is roughly equal before performing these commands.

If the controlling SCP fails before the CDB is synchronized, the CDB is lost.

## 4.3.2 Adding a Standby SCP

If only one SCP is installed in the switch fabric, it automatically assumes itself to be the controlling SCP. In this case, the SCP periodically checks the fabric for the presence of a second SCP. If a second SCP is detected, the switch will begin to run in dual SCP mode.

While in dual mode, the controlling SCP continually monitors the presence of the standby SCP. If the controlling SCP fails to detect a second SCP, the controlling SCP disables all synchronization and runs in standalone mode (not dual).

## 4.3.3 Rebooting the Controlling SCP

When the switch is running in dual mode, a reboot request on the controlling SCP (i.e., after a software upgrade) will not cause the standby SCP to take control of the switch. Instead, the controlling SCP will send a pause signal to the standby SCP.

This pause request will force the standby SCP to disregard the absence of the controlling SCP for two minutes. Once the controlling SCP restarts, both SCPs will assume normal, dual mode operation.

## 4.3.4 Ethernet Connection

When two SCPs are installed in an ASX-200BX, Ethernet connectivity is only available if the Ethernet port on each SCP is physically connected to the network. If dual SCPs are utilized on an ASX-1000, the Ethernet connection can be made using the individual SCPs or the ASX-1000's Common Equipment Card (CEC). If the SCP is accessed via ATM, the Ethernet connection is not necessary.

### NOTE



If two SCPs are installed in a switch fabric, each SCP must have its own entry in the `bootptab` file (used for network booting). Using only one entry causes unpredictable Ethernet ARP behavior.

## 5.0 Contacting Technical Support

In the U.S.A., you can contact FORE Systems' Technical Support by any one of four methods:

1. You may telephone your questions to "support" at:  
**800-671-FORE (3673) or 412-635-3700**
2. If you have access to the Internet, you may contact support via e-mail at:  
**support@fore.com**
3. You may FAX your questions to "support" at:  
**412-742-7900**
4. You may send questions, via U.S. Mail, to:

**FORE Systems, Inc.  
1000 FORE Drive  
Warrendale, PA 15086-7502**

Technical support for non-U.S.A. customers should be handled through your local distributor.

No matter which method is used for technical support, please be prepared to provide your support contract ID number, the serial number(s) of the product(s), and as much information as possible describing your problem/question.

